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Not All Protein-Mediated Single-Wall Carbon Nanotube Dispersions Are Equally Bioactive†

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Table S1. Summary of calculated protein secondary structure (using DichroWeb[1, 2]) from circular dichroism data of SWCNTs–protein dispersions generated with varying sonication time.

Protein	Son. Time [h]	Helix	Beta	Turn	Random	Total	Helix [% Δ]	Beta [% Δ]	Turn [% Δ]	Random [% Δ]
BSA	0	0.677	0.020	0.123	0.182	1.00	0.00	0.00	0.00	0.00
BSA	1	0.657	0.024	0.132	0.188	1.00	-2.95	20.0	7.32	3.30
BSA	2	0.598	0.032	0.153	0.217	1.00	-11.7	60.0	24.4	19.2
BSA	4	0.628	0.028	0.138	0.207	1.00	-7.24	40.0	12.2	13.7
BSA	6	0.605	0.031	0.151	0.215	1.00	-10.6	55.0	22.8	18.1
BSA	12	0.572	0.033	0.172	0.225	1.00	-15.5	65.0	39.8	23.6
LSZ	0	0.445	0.093	0.212	0.252	1.00	0.00	0.00	0.00	0.00
LSZ	1	0.394	0.120	0.220	0.268	1.00	-11.5	29.0	3.77	6.35
LSZ	2	0.405	0.111	0.223	0.263	1.00	-8.99	19.4	5.19	4.37
LSZ	4	0.401	0.118	0.216	0.267	1.00	-9.89	26.9	1.89	5.95
LSZ	6	0.376	0.137	0.220	0.268	1.00	-15.5	47.3	3.77	6.35
LSZ	12	0.365	0.139	0.223	0.274	1.00	-18.0	49.5	5.19	8.73

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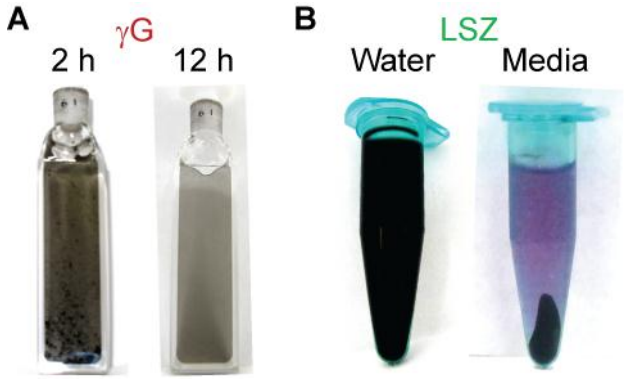

Fig. S1 Stability of SWCNTs dispersed using γG and LSZ in water and cell culture media. (A) SWCNTs–γG formed clusters in water within a few hours after 2 h sonication. Clustering of SWCNTs–γG reduced significantly after sonicating the dispersion for 12 h. The clustering of SWCNTs–γG did not get affected when mixed with cell culture media. See the text for more details. (B) SWCNTs–LSZ were stable in water but flocculated and sedimented to the bottom of the centrifuge tube when mixed with cell culture media.

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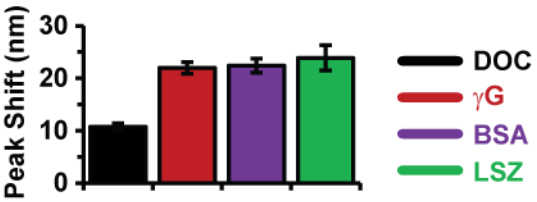

Fig. S2 Absorbance peak shifts of SWCNTs–protein dispersions based on prominent absorbance peaks within the wavelength range of 1105 – 1315 nm relative to the empirically determined Kataura plot.[3] The magnitude of the NIR fluorescence emission peak shifts, shown in Figure 1D, was similar to the NIR absorbance peak shifts.

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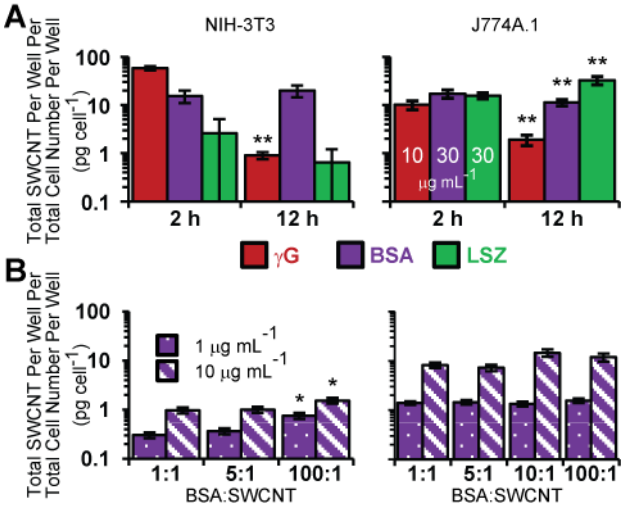

Fig. S3 Quantification of the sonication time and protein:SWCNT effects on cell association of SWCNTs. (A) Drastic differences in cell-associated SWCNTs for 2 *versus* 12 h sonicated SWCNTs–LSZ and SWCNTs–γG dispersions were likely confounded due to aggregation and nonspecific adsorption. See text for more detail; BSA data from Figure 6 is included for comparison. (B) Quantification of SWCNTs–BSA cellular uptake into NIH-3T3 murine fibroblasts and J774A.1 murine macrophage-like cells at two different dosage of BSA:SWCNTs. * $p < 0.05$ for 100:1 compared to both 5:1 and 1:1 of same concentration and ** $p < 0.01$ for 12 h compared to 2 h of same protein.

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